Simulation and Industry Mentors as a pathway to learning 'near world' Project Management

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Abstract

Students are increasingly finding it difficult to learn project management in a classroom environment that is conducted using a traditional teaching approach as it lacks the complexity to bring real-life project experiences to life. Simulation is a widely accepted technique to create models that resemble the real life business context and can be very useful for teaching and learning project managzement. Expert project managers can also share project management scenarios with the students and successfully mentor them during their learning process. This paper brings these two techniques together and presents an alternative teaching methodology for project management that uses latest simulation technology and involves industry mentors to generate 'near world' project knowledge and a positive learning experience in a stimulating, enjoyable and engaging learning and teaching environment.

Introduction

The current business environment is more complex than ever. The people in organisations, however, remain the same: they are not properly equipped to handle such complex and ill-structured problems. Project Managers are no exception to that. Academics who are engaged in preparing students for future management roles in general and project management jobs in particular, are dealing with increasing challenges to create a learning environment in the classroom that is similar to the real business world and also fosters interactive teaching, knowledge dissemination, and includes a skill acquisition process.

Simulation is an effective technique of business education (Chapman & Sorge, 1999; Wolfe & Luethge, 2003). It can provide rewarding experiences and intelligence, planned decision making and promote the integration of theory and practice (Wolfe & Luethge, 2003) and assist students in integrating the various functional business specialisations (Stephen, Parente & Brown, 2002).

There is a gap in the research around using mentors in an educational environment to enhance student learning and success. Schlee (2000) suggests that little has been written about the implementation of mentoring programs by business schools. This gap in the literature is especially visible for mentoring business students in academic environments, notwithstanding the fact that researchers, scholars, experts as well as students agree that mentoring is a critical component of effective undergraduate education. We also observe a lack of sufficient research on the use of business mentors in business education setting to enhance learning (Abate & Eddy, 2008; de Janasz, Ensher, & Heun, 2008, Jacobi, 1991).

A wide range of tools such as Project Simulations are available to academics for teaching project management. However, the success or otherwise of integrating a simulation with the support of industry mentors in the classroom environment is not well documented and in fact is almost non-existent. This integrated teaching approach would have a positive impact on student learning outcomes. However, there is no confirmation of this, and research is required to understand the student and mentor perspective on the benefits and challenges of participating in partnership linked to a Project Management simulation. This exploratory research intends to provide a step towards the development of this sphere of research.

We explore the impact of using current project management simulation gaming technology, combined with industry experts as mentors for creating a blended teaching and learning environment for undergraduate students within an institute of technology. It also critically analyses how this approach enhances educational performance in bringing the student closer to a 'near world experience'. This paper also seeks to determine the nature and extent of the influence of a computer simulation on the learning experience and the influence of an industry mentor on the learning experience.

Simulation as a Learning Strategy

Dewey (1916), a pioneer in experiential learning, argues for curricula that accommodates activity-based learning and also defines learning as something that the individual does during study. Dewey also observes that study is an active and personally conducted affair.

Kolb (1985) expands Dewey's concept of education as a social function in developing his 'Experiential Learning Model' (Figure 1). Kolb contends that knowledge is created and recreated through deliberate and reflective experimentation and defines experiential learning as a "process whereby knowledge is created through the transformation of experience". Learning by doing is the key concept that distinguishes experiential learning approaches from passive cognitive techniques, such as traditional classroom lectures.

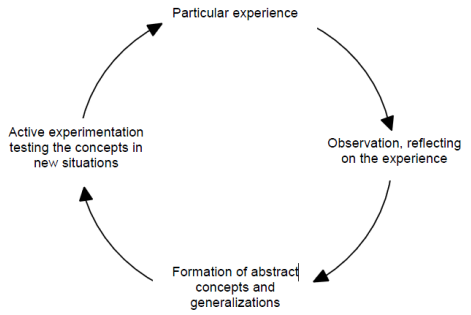

Figure 1: Kolb's Cycle of Experiential Learning

Simulations have also been found to assist students in integrating the various functional business specialisations (Stephen, Parente, & Brown, 2002). Simulations are already used in a wide range of subject areas: marketing (Chapman & Sorge, 1999); international business (Farrell, 2005); and Project Management (Barros, Dantas, Veronese, & Werner, 2006, Jaafari & Doloi, 2002; Smith-Daniels, 2008). Zwikael & Gonen, (2007) outline a number of simulation games. Simulation tools such as the Monte-Carlo simulation and the Crystal Ball tool were introduced by Meredith & Mantel, 2006, and computer-based training for student education in software project management. (Pfahl, Laitenberger, Dorsch & Ruhe, 2001)

Simulated business games are found to be an effective learning tool (Zwikael & Gonen, 2007). They identify that the major advantages of simulated business games as a training method are:

- *games are stimulating and enjoyable;*
- *games develop team working skills;*
- *games offer a risk-free environment;*
- *participants can try out new behaviours which they would not readily attempt at work; and*
- *games allow people to see the consequences of their decisions (experiential learning)*

However, a substantial time commitment is required from participants in order to be effective learners (Anderson & Lawton 2009).

Game Selection

Business simulation alone may not be an effective pedagogy for teaching terminology, factual knowledge, basic concepts, or principles. The basics of a course can be covered more quickly in lectures. "It may be an open debate as to whether students will be able to retain or implement some of these basics if lecture is the sole method of delivery, but few will dispute that lectures are much faster" (Anderson & Lawton, 2009, p. 195). In reality the development of graduate capabilities are constrained by time (course length) – simulations provide a platform to enhance rather than constrain learning outcomes.

Gentry, Burns & Fritzsche (1993), suggest that there is taxonomy as to what issues need to be addressed to ensure that pedagogical issues are appropriate. These seven issues are: game selection; game familiarisation; missing decisions; game complexity; group problems; and grading issues and debriefing. All seven issues within the taxonomy must be considered for the simulation to be effective. Zwikael & Gonen (2007) consider a number of the issues in gaming simulation in the context of SimProject™ and observe that most games focus primarily on two of the nine project knowledge areas – time and cost management. They also mention the simulation game used as the basis of this research project, and refers to it as... "Being able to tie together many of the salient challenges of project management in order to give students the deepest possible understanding of the complexities involved in undertaking a project". Zwikael & Gonen's research also provides a meta-analysis of games available for project management.

A real world scenario normally does not allow room for error. The simulation allows the instructor to monitor each of the twelve periods in which decisions are made. It also allows for students to make mistakes and learn from these mistakes without the consequences one would receive in a 'real situation'. The use of mentors within this course also provides an opportunity for each team of students to confirm the viability of their decision-making.

The use of the simulation game is designed to encourage group participation and to encourage some competition between the teams by way of ranking teams against each other. Instructors need to provide students with systematic guidance of team-based business simulations in order to foster a psychologically safe group environment (Xu & Yang, 2009). Group problems are also identified by Gentry, Burns, and Fritzsche (1993) who nominate teams of 3 or 4 but highlight composition as being an issue. They recommend that groups be formed by random allocation and that instructors should use "management by exception" to ensure group cohesion. The process leaves the teacher to watch out for signals of non performance by group members.

Game selection is only one of the considerations when integrating a 'near world experience' within a learning environment. Addressing the seven issues described in the taxonomy is imperative when developing a framework for simulations within a business learning context.

The role of Industry Mentors

The role of industry mentors in the classroom environment for teaching project management is yet to be fully fleshed out through experiments. This demands more research on mentoring. Jacobi (1991) suggests that primary data should be collected at 'multiple intervals', rather than just pre-and post mentoring. Although this article documents the extensive variability in the way mentoring programs are implemented; there is little documentation of mentoring program outcomes.

A number of research studies focus on a particular aspect of mentoring but fail to view the wider perspective of mentoring. Mentoring can extend and enhance the educational experience by providing connections to the practical word of business. The role of the mentor has been to provide individuals with experience, knowledge, wisdom, skills and influence to support and promote career development through an interactive relationship. They help the student to learn to navigate the world of work, provide advice and instruction about jobs, career planning and guidance, orientation to an industry, direction regarding interpersonal development, role modelling, feedback, and guidance to enhance the learner's growth (Abate & Eddy, 2008, p. 363).

Mentoring relationships when well planned and monitored are the key to enhancing individual growth and learning. It is in the planning that quality relationships develop. It is not just a case of connecting the mentor or mentee in an informal manner. The correlation between success and a formal mentoring program and the quality of the interactions cannot be denied (Allen & Poteet,1999).

The role of the mentor differs from the traditional role of the supervisor or the teacher, a supervisor or teacher helps the employee or student to perform specific tasks correctly, the mentor helps the mentee achieve longer term, boarder goals. Furthermore the mentor does not necessarily carry the formal authority of a supervisor or teacher (Jacobi, 1991).

Zachary (2005) suggests that a 'learning Partnership' should be established that is congruent with the learner centred mentoring paradigm. Which is a shift from the mentor-driven paradigm, the mentor has become a 'guide on the side' rather than a 'teacher of the student'

Mentoring is symbiotic in that it can yield substantial benefits for the mentor as well as the mentee. It provides an opportunity for the mentor to share and reflect on their own contributions to their profession and to define steps in their own career progression or future path. A mentor involved in mentoring shares in the enthusiasm of their mentee; they may also gain new insight into their own careers and become almost revitalised by stepping back from the day to day activities of their role (Allen & Poteet, 1999, Kasprisin, Single, Single, Ferrier, & Muller, 2008)

A number of the studies focus on a particular aspect of mentoring but fail to view the wider perspective of mentoring. Current research is seen as commendably, instrumental in its motivations and it is suggested that the most important reason for limited progress towards a more unifying theory of mentoring is a failure to conform some of the lingering conceptual gaps in research and theory. Researchers need to provide a careful definition of mentoring and be clear on the concepts of mentoring, and to sort mentoring from adjacent concepts such as training, coaching, socialisation, and even friendship (Bozeman & Feeney, 2007, p. 735).

The importance of the role of the industry mentors within this learning context in this course was real. The teams could pre-test their simulation decisions through the lens of the mentor and within the context of the project management world. They could discuss lessons learned and best practices as a post-review at the end of each simulation round. The simulation became the platform for the learning but the depth and breadth of understanding came through the mentor and mentee relationship.

Conclusion

To further gain insights into the training and development required to underpin and enhance Project Management as a profession further research to gain 'real' feedback on the experiences of students and mentors from integration of the 'near world' learning experience is imperative.

Combining a computer simulation which is multifaceted and, project managers as industry based mentors provides depth to the learning as well as some risk for the students as they discuss and justify their decision making through the lens of their mentors and measure their success not only against the project constraints but also on their ranking against the other teams.

The link between mentoring and the use of a specific project management based simulation provides a scaffold for optimal learning. This occurs within the Zone of Proximal Development (ZPD) which can be defined as "the region that lies beyond the learner's independent problem-solving skill, but still within reach with the right support" (Bonk and Kim, 1998, p.70.). To be provided the opportunity to reflect and act upon best practices and lessons learnt with a real project manager as a mentor (a guide on the side) provides a strong context to improve and enhance this type of teaching and learning pedagogy.

Students will have better learning experience if exposed to both simulation and industry mentors in the project management classroom. The student becomes engaged in a 'near world' experience and the industry mentor influences the future of their own profession. Mentoring and the use of a simulation game are separate yet integral parts of developing graduate capabilities that are tangible.

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